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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,483	11/10/2005	Yusuke Suzuki	S1459.70092US00	3894

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EXAMINER	
HENRY, CALEB E	

ART UNIT	PAPER NUMBER
2894	

MAIL DATE	DELIVERY MODE
11/10/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,483	SUZUKI ET AL.	
	Examiner	Art Unit	
	CALEB HENRY	2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7,8 and 16-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 7-8, 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application.
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/02/2010 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugnaux (20040131934).

Regarding claim 1, Sugnaux teaches an electrode for incorporation in a solar cell ((Sugnaux, par. 4)), the electrode comprising a mixture of carbon (Sugnaux, par. 52-55) carrying a metal and a binder (Sugnaux, par. 49 and 52-55), carbon having a specific surface area equal to or larger than 100 m^2/g **[one with common knowledge in the art would know that carbon fibers, which include but are not limited to graphite, carbon black and graphitic materials, have surface areas from about 1500 m^2/g to**

1 m^2/g (please see references cited but note used for backing of this well known fact). Sugnaux teaches that the carbon used can be carbon black or graphitized carbon. (par. 53)], **wherein the solar cell exhibits a photoelectric transfer coefficient of about 5.8% or greater**.

Sugnaux does not explicitly teach that the metal is either a pure metal or an alloy metal comprising at least one metal selected from the group consisting of Pt, Ru, Co, Ti, Ni, Al and Au.

However, Sugnaux does teach that the electrode is composed of an activator which includes, but is not limited to Group IIIA elements (Sugnaux, par. 55).

One with common knowledge in the art would know that Group IIIA elements includes, but is not limited to, Al.

Concerning the limitation "...**wherein the solar cell exhibits a photoelectric transfer coefficient of about 5.8% or greater**", it has been held that where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). It should be noted that Sugnaux does teach s device similar in structure to that of claim 1, and thus would possess the characteristics of the claimed device.

Also where applicant claims a composition in terms of a function, property or **characteristic** and the composition of the prior art is the same as that of the claim but

the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

Regarding claim 2, Sugnaux teaches an electrode according to claim 1, which is formed on an electrically conductive substrate (Sugnaux, fig. 2, 26).

Regarding claim 3, Sugnaux teaches an electrode according to claim 2 wherein the electrically conductive substrate is made of glass, a polymer film or a metal (Sugnaux, par. 46).

Regarding claim 4, Sugnaux teaches an electrode according to claim 1 wherein the carbon is needle-like carbon, fullerene, carbon nanotube or electrically conductive carbon black (Sugnaux, par. 52-53)

Regarding claim 7, Sugnaux teaches an electrode according to claim 1 wherein the specific surface area of the carbon is equal to or larger than 300 m^2/g (please see claim 1 for explanation).

Claims 8 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugnaux.

In regard to Claim 8 Sugnaux shows that the metal makes up 10% or more, by weight of the nanoparticles in the mixture (par. 50). It would have been obvious to one having ordinary skill in the art at the time the invention was made for the amount of the metal carried by the carbon is equal to or more than 5 weight percent of the carbon because this allows for a 10%, since it has been held that where the general conditions

of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 18, Sugnaux teaches an electrode for incorporation in a solar cell (Sugnaux, par. 4), the electrode comprising a mixture of carbon (Sugnaux, par. 52-53) carrying both a metal and a binder (Sugnaux, par. 52-53)

wherein the solar cell exhibits a photoelectric transfer coefficient of about 5.8% or greater.

Sugnaux does not explicitly teach that the metal is either a pure metal or an alloy metal comprising at least one metal selected from the group consisting of Pt, Ru, Co, Ti, Ni, Al and Au.

However, Sugnaux does teach that the electrode is composed of an activator which includes, but is not limited to Group IIIA elements (Sugnaux, par. 55).

One with common knowledge in the art would know that Group IIIA elements includes, but is not limited to, Al.

Concerning the limitation "...**wherein the solar cell exhibits a photoelectric transfer coefficient of about 5.8% or greater**", it has been held that where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). It should be noted that Sugnaux does teach s device similar in structure to that of claim 1, and thus would possess the characteristics of the claimed device.

Also where applicant claims a composition in terms of a function, property or **characteristic** and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

Thus, it would have been obvious to one of ordinary skill in the art at the time said invention was made to use Al, since Sugnaux implicitly teaches this fact.

In regard to Claim 18 Sugnaux shows that the metal makes up 10% or more, by weight of the nanoparticles in the mixture (par. 50). It would have been obvious to one having ordinary skill in the art at the time the invention was made for the amount of the metal carried by the carbon is equal to or more than 5 weight percent of the carbon because this allows for a 10%, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

In regard to Claim 19 Sugnaux shows that the metal makes up 10% or more, by weight of the nanoparticles in the mixture (par. 50). It would have been obvious to one having ordinary skill in the art at the time the invention was made for the amount of the metal carried by the carbon is equal to or more than 5 weight percent of the carbon because this allows for a 10%, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugnaux as applied to claim 1 above, and further in view of Ishibashi (JP 2003021410).

Regarding claim 16, Sugnaux teaches an electrode comprising a carbon carrying a metal and a binder.

However, Sugnaux does not teach the electrode is disposed immediately adjacent to an electrolytic layer.

Ishibashi teaches an electrode (fig. 1, page 14, 4) disposed immediately adjacent to an electrolytic layer (fig. 1, page 14, 5).

One with ordinary skill in the art would know that the electrolytic layer acting as an electrochemical contact. Also, both teachings are related to the same field of endeavor i.e. fabrication of solar cells.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to append the teachings of Ishibashi to the teachings of Sugnaux due to aforementioned reasons.

Regarding claim 20, Sugnaux/Ishibashi teaches an electrolytic layer (Ishibashi, fig. 1, page 14, 5) disposed adjacent to the electrode (Ishibashi, fig. 1, page 14, 4) and a semiconductor layer (Ishibashi, fig. 1, page 14, 2) disposed adjacent to the electrolytic layer.

In regard to Claim 20 Sugnaux/Ishibashi differs from the claimed invention by not showing the electrolytic layer having a thickness of between about 1 micron and 100 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the electrolytic layer having a thickness of between about 1 micron and 100 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugnaux as applied to claim 1 above, and further in view of Yamakawa (US 66566633 B2).

Regarding claim 17, Sugnaux teaches an electrode comprising a carbon carrying a metal and a binder.

However, Sugnaux does not teach the binder is insoluble to electrolytes.

Yamakawa teaches the binder is insoluble to electrolytes (Yamakawa, col. 7, lines 62-67).

One with common knowledge in the art would know by having a binder with such properties, this prevents the diffusion of electrolytes, from the electrolytic layer.

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to append the teachings of Yamakawa to the teachings of Sugnaux due to aforementioned reasons.

Response to Arguments

Applicant's arguments filed 09/30/2010 have been fully considered but they are not persuasive. The limitation added to claims 1 and 18 does not set it apart from the prior art structure found in Sugnaux. Further, Applicant explains that the **method** used to create device of claim 1 makes an electrode with such a transfer coefficient. However, this is all irrelevant, according to In Re Best, when dealing with the claiming of a device structure. Thus, previous rejection stands.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Tatarchuk (5096663) – col. 3, lines 30-52 – gives the surface area per gram of carbon fiber.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CALEB HENRY whose telephone number is (571)270-5370. The examiner can normally be reached on 9 a.m.-5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CALEB HENRY/
Examiner, Art Unit 2894

/Kimberly D Nguyen/
Supervisory Patent Examiner, Art Unit 2894